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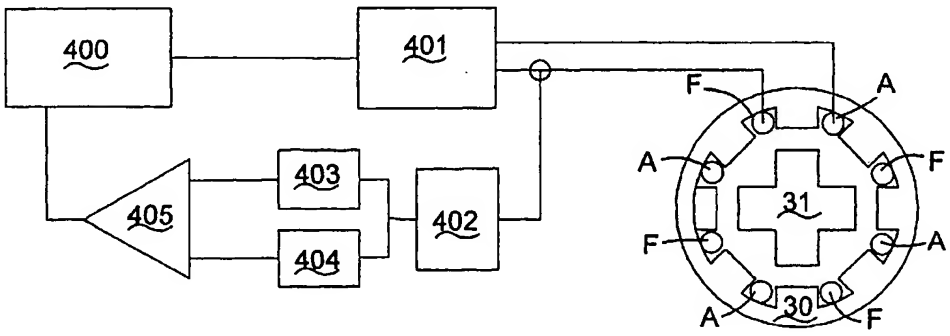
(54) Title: CONTROL OF AN ELECTRICAL RELUCTANCE MACHINE



(57) Abstract: An electrical machine having stator (30) and rotor (31) is disclosed. The motor has field windings (F) and armature windings (A) energized by a suitable power electronic controller (401). A controller (400) sends signals to the power electronic controller (401) to control the armature current to control operation of the machine. When the machine is operating as a motor, the armature windings (A) will be supplied with electrical current from the power electronic controller by the application of applied voltage in synchronism with the rotation of the rotor (31). A mutually induced first electrical signal dependent on rotational position of the rotor will be induced within the field windings (F). This will create a superimposed gradient in the field current delivered by the power electronic controller (401). The mutually induced first electrical signal can be extracted from the field current by block (402) which may be a differentiator circuit or may be a coil coupled to the magnetic field around the field current conductor. A signal conditioning circuit (403) is provided which may contain a filter circuit. Block (404) creates a reference voltage for the comparator (405). The reference voltage can be zero such that the comparator (405) determines the polarity of the mutually induced first electrical signal. The output from the comparator is a digital signal indicating if the mutually induced first electrical signal is less than or greater than the threshold applied by block (404). This comparator output, a second electrical signal, represents the rotational position of the rotor relative to the stator and is supplied to the controller (400) to maintain synchronism between the armature excitation and the rotor position.

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